Equipment and Capital Budget Assignment

Reason for Needing a New Oven

I am the foodservice director for the foodservice company that supplies food to all the elementary schools in an entire school district that serve hot meals in Northern CA. Recently, a neighboring school district has shut down, resulting in hundreds of students being transferred to our school district. Because of the influx of students we have an increased need for more meal production. The one oven that we currently have will not suffice to supply all the food demanded during the lunch hour and therefore we need a new oven. In addition to this, the oven that we currently have is getting very old and its efficiency has decreased. A new convection oven is needed in order to produce enough food before the increase in students.

Comparison of Ovens

Two ovens chosen on Fishnick – Gas and Electric

a) Gas: Alto Shaam ASC 4G
b) Electric: Vulcan VC4ED

	Alto Shaam ASC 4G	**Vulcan VC4ED**
Initial Cost of Purchase	$4,770	$3,049
Preheat Energy Consumption	8,633 Btu	1.5 kWh
Idle Energy Rate	21,013 Btu/h	1.89 kW
Heavy Load Cooking Energy Efficiency (%)	42 +/- 2.0	69.8 +/- 3.2
Production Capacity (lb/hr)	82.7 +/- 1.0	93.2 +/- 4.2
Lifetime Energy Cost	$12,684	$18,312
Lifetime Maintenance Cost	$1,440	$1,260
Total Lifetime Cost	$18,894	$22,621
Gas vs. Electric	Gas Convection	Electric Convection

Base Efficiency Ovens – Gas and Electric

	Gas Base Oven	**Electric Base Oven**
Initial Cost of Purchase	$3,042	$2160
Preheat Energy Consumption	19,000 Btu	2 kWh
Idle Energy Rate	18000 Btu/h	2 kW
Heavy Load Cooking Energy Efficiency	30%	65%
Production Capacity	70 lbs/hr	70 lbs/hr

(lb/hr)		
Lifetime Energy Cost	$12,624	$19020
Lifetime Maintenance Cost	$1800	$1440
Total Lifetime Cost	$17466	$22620

Energy Star Ovens – Gas and Electric

	Gas	**Electric**
Initial cost of Purchase	$6069	$5121
Preheat Energy Consumption	11000 Btu	1 kWh
Idle Energy Rate	11758 Btu/h	1.4 kW
Heavy Load Cooking Energy Efficiency	45%	73%
Production Capacity	83 lbs/hr	82 lbs/hr
Lifetime Energy Cost	$8340	$14676
Lifetime Maintenance Cost	$1164	$1056
Total Lifetime Cost	$15573	$20853

Initial Cost of Purchase

The least expensive initial cost for an oven is the Electric Base Efficiency Oven at $2160, followed by the Gas Base Efficiency Oven at $3042, then the Vulcan VC4ED Electric Oven at $3049, and then the Alto Shaam ASC 4G at $4770. The two most expensive ovens are the Energy Efficient Electric Oven at $5121 and the Energy Efficient Gas at $6069.

At a Glance (from least to most expensive): 1) Electric Base Efficiency 2) Gas Base Efficiency 3) Electric Vulcan VC4ED 4) Gas Alto Shaam ASC 4G 5) Electric Energy Efficient Oven 6) Gas Energy Efficient Oven

Performance – Heavy Load Cooking Energy Efficiency

In general, it appears that the electric ovens are more efficient than the gas ovens. The most efficient oven, based on heavy loading cooking energy efficiency, is the Energy Efficient Electric Oven at 73% efficiency. Next is the Electric Vulcan VC4ED Oven at 69.8% efficiency, then the Electric Base Oven at 65%, then the Gas Energy Star Oven at 45%. The two least efficient ovens are the Gas Alto Shaam ASC 4G Oven at 42%, close to the Gas Energy Star Oven, and then Gas Base Oven at 30%.

At a Glance (from most efficient to least): 1) Energy Efficient Electric Oven 2) Electric Vulcan VC4ED 3) Electric Base Oven 4) Gas Energy Efficient Oven 5) Gas Alto Shaam ASC 4G 6) Gas Base Oven

Performance – Production Capacity

All 6 of the ovens looked at have relatively similar production capacities. The two Energy Star Ovens, both gas and electric, have almost the same production capacity at 83 lbs/hr and 82 lbs/hr, respectively. The Base Efficiency Ovens have a slightly less production capacity than the Energy Star Ovens, with both the gas and electric at 70 lbs/hr. The Electric Vulcan VC4ED has the highest production capacity at 93.2 lbs/hr and then the Gas Alto Shaam ASC 4G has a production capacity of 82.7 lbs/hr.

At a Glance (from highest to lowest capacity): 1) Electric Vulcan VC4ED 2) Gas Energy Efficient Oven 3) Gas Alto Shaam ASC 4G 4) Electric Energy Efficient Oven 5&6) Gas and Electric Basic Efficiency Ovens (same)

Lifetime Cost – Energy

The Gas Energy Efficient Oven has the lowest lifetime energy cost of $8340. Next is the Gas Base Energy Efficient Oven at $12624, then the Gas Alto Shaam ASC 4G Oven. The Electric Energy Efficient Oven has a lifetime energy cost of $14679, then the Electric Vulcan VC4ED, and lastly, with the most expensive lifetime energy cost, is the Electric Base Efficient Oven at $19020.

At A Glance (from lowest to highest lifetime energy cost): 1) Gas Energy Efficient Oven 2) Gas Base Efficient Oven 3) Gas Alto Shaam ASC 4G 4) Electric Energy Efficient Oven 5) Electric Vulcan VC4ED 6) Electric Base Efficiency Oven

Lifetime Cost – Maintenance

The oven with the least expensive lifetime maintenance cost is the Electric Energy Efficient Oven at $1056, then the Gas Energy Efficiency Oven at $1164, then the Electric Vulcan VC4ED at $1260. Next are the Electric Base Efficiency Oven and the Gas Alto Shaam ASC 4G with a lifetime maintenance cost of $1440. Lastly is the Gas Base Efficiency Oven at $1800.

At A Glance (from lowest to highest lifetime maintenance cost): 1) Electric Energy Efficient Oven 2) Gas Energy Efficient Oven 3) Electric Vulcan VC4ED 4&5) Electric Base Efficiency Oven and the Gas Alto Shaam ASC 4G 6) Gas Base Efficiency Oven

Lifetime Cost – Total

The gas convection ovens have the least amount of total lifetime cost. The Gas Energy Efficient Oven has the least total lifetime cost at $15573, then the Gas Base Efficiency Oven at $17466, and then the Gas Alto Shaam ASC 4G. The most expensive lifetime cost ovens are the electric. The 4th least expensive is the Electric Energy Efficient Oven, then the Electric Base Efficiency Oven and lastly the Electric Vulcan VC4ED.

<u>At A Glance (from lowest to highest total lifetime cost):</u> 1) Gas Energy Efficiency Oven 2) Gas Base Efficiency Oven 3) Gas Alto Shaam ASC 4G 4) Electric Energy Efficient Oven 5) Electric Base Efficiency Oven 6) Electric Vulcan VC4ED

Recommendation

I would recommend the Gas Energy Efficient Oven because it has the lowest lifetime energy cost of $15573. It has the lowest lifetime energy cost because it has the lowest lifetime energy cost, at $8340, and the second lowest lifetime maintenance cost, at $1164. The initial cost for the Gas Energy Efficient Oven is the most expensive at $6069, however I believe that the long-term costs are more important to look at and outweigh the initial costs and therefore is a better investment. Performance capacity is also a very important thing to look at while choosing our oven. The Gas Energy Efficient Oven has a production capacity of 83 lbs/hr which is the second highest production capacity out of all 6 ovens. While the Heavy Load Energy Efficiency is rather low, at 45%, when compared to the electric ovens, it has the highest efficiency when compared to the other gas convection ovens. I would recommend the Gas Energy Efficient Oven because although the efficiency is low, it has good performance quality and has significantly less expensive lifetime costs.

Both the Electric and Gas Base Efficiency Ovens have low initial costs at $2160 and $3042, respectively, the lifetime costs are high. The Electric Base Efficiency Oven has a lifetime cost of $22620 and the Gas Base Efficiency Oven has a lifetime cost of $17466. The Gas and Electric Base Efficiency Oven has a high production capacity but not as high as the Energy Efficient Ovens. Their production capacities are also the lowest for both the Electric Ovens and the Gas Ovens.

The Electric Vulcan VC4ED has the highest total lifetime cost and the middle efficiency for the Electric Ovens. It does have the highest production capacity out of all the ovens but I don't think that this alone would make it an oven I would recommend.

The Gas Alto Shaam ASC 4G has a pretty middle total lifetime cost, at $18894. It has the middle heavy load efficiency and the middle production capacity for the electric ovens. In general, it's efficiency is low.

<u>At A Glance:</u>
Once again, I would recommend that our foodservice company purchase the Gas Energy Efficient Oven. Not only will it save thousands of dollars in the long run, despite the high initial cost, but is has a high production capacity and then highest energy capacity among the gas ovens. The Gas Energy Efficient Oven will cost our company $6069 initially, but only $15573 for total lifetime costs, saving us thousands of dollars.